

Assessment of GPRA Environmental Indicators (CA725 and CA750)

Site Summary:

DuPont Chambers Works, Deepwater, New Jersey NJD002385730

Background: The 1,455-acre DuPont Chambers Works Complex (composed of the Chambers Works manufacturing area and the former Carneys Point Works) is located along the eastern shore of the Delaware River in Deepwater, New Jersey. East of the Chambers Works Complex are light industrial, residential and recreational areas. North of the Complex are community service and residential areas with the Delaware River to the west. The site began its industrial history in 1892 when the Carney Point smokeless gunpowder plant was constructed. Since then, operations have included the production of dyes, freon, tetraethyl lead, aromatic chemicals and elastomeric polymers. The site was used during World War II for research and development of chemicals for the production of radiological materials which contributed to the development of the atomic bomb. By the early 1980s, the manufacture of explosives and dye ended, leaving only chemical manufacturing. Currently, there are several active waste-management areas on the site, including a secure landfill and a wastewater treatment plant.

An NJDEP RCRA permit allows DuPont to operate the hazardous waste container storage areas, treatment units, a containment building, and a secure landfill. DuPont is also required under a RCRA permit to do site-wide groundwater monitoring. A permit issued by EPA and an agreement between NJDEP and DuPont require DuPont to perform cleanup of the site. In addition, the U.S. Army Corps of Engineers is evaluating the areas utilized in the past for the radiological material research and development and, if deemed necessary, they will clean up any of the areas.

Contamination: Extensive chemical manufacturing and waste management at the site have resulted in contamination of the site's groundwater and soils. Contaminants include organic and inorganic chemical constituents (such as benzene, chlorobenzene, 1,2-dichlorobenzene, nitrobenzene, 2,4-dinitrobenzene, trichloroethylene, xylene, aniline, lead, cadmium, and arsenic), polychlorinated biphenyls (PCBs), and radiological materials. Chemicals that are heavier than water (such as chlorobenzene, 1,2-dichlorobenzene, trichloroethylene, and lead) and therefore sink within the aquifer are also present.

Corrective Action: The closures of the three basins and the ditches (Basins A, B, and C, and A and C ditches) were completed in the early 1990s. Two rounds of investigation on SWMUs, sitewide groundwater, and NAPL were completed. A third round of investigation has been proposed and is currently being reviewed. A number of interim measures -- such as removal of source materials, installation of caps over contaminated areas, and fences -- have been completed to address immediate environmental concerns.

A system was installed in the 1970s to pump and treat contaminated groundwater. The groundwater is pumped at a rate of 1.5 million gallons per day. The pumped groundwater is sent to an on-site wastewater treatment plant. Then, after meeting acceptable standards, it is pumped

into the Delaware River. A sitewide groundwater monitoring program has been installed to monitor the effectiveness of the system.

Problems:

Groundwater: The groundwater pump and treat system is effective in controlling the flow and migration of most of on-site contaminated groundwater but contaminated groundwater discharges to the Delaware River along portions of the western and southern property boundaries. DuPont must show that such discharge has no adverse impacts on human and the environment.

Contaminant concentrations at groundwater monitoring wells along and near the Delaware River are higher than 10 times of their respective groundwater standards. According to DuPont, the computer modeling shows that the interaction/mixing of River surface water with groundwater in the interface (hyporeic zone) between surface water and groundwater dilutes contaminants enough so that the concentrations are below the respective standards by the time when contaminated groundwater reaches and discharges to the surface water body. However, no field sampling and evaluation of data has yet been performed to verify/confirm the modeling result.

SWMUs/AOCs: Some SWMUs at the site have been investigated but there are still a number of SWMUs that have yet been investigated for their potential environmental impacts on soils and groundwater. DuPont must complete the RCRA remedial investigations of all SWMUs at the site to assess the impacts and/or to determine the extent and degree of contamination.

NJDEP's approach is to address one or a group of SWMUs at a time to their completion (investigations and remediation, if necessary) and to move on to a next SWMU or a group of SWMUs. The NJDEP approach unlikely addresses the entire SWMUs at the site in time to allow EPA's positive EI evaluation by 2005. In contrary to the NJDEP approach, in a letter dated April 2001, EPA has repeated what was previously requested by EPA through the reviews of the Phase I and II RFIs that DuPont must evaluate the entire SWMUs at the site.

Solutions:

Groundwater: Request DuPont to meet one of the following options concerning groundwater-surface water interaction. If DuPont refuses and proposes no other feasible options, it may be referred to the Enforcement:

- * High pumping rates and/or more pumping wells along and near the Delaware River to prevent unacceptable discharge of contaminated groundwater to the River.
- * Collecting samples of River surface water and sediment to show that they are in compliance of their respective standards. If not, request DuPont to take additional actions to prevent unacceptable discharge of contaminated groundwater.
- * Collecting samples from the hyporeic zone to show that the sampling results are consistent with what the modeling result has predicted. If negative, DuPont must re-evaluate the modeling or take other acceptable approaches.

SWMUs: DuPont must immediately begin investigations of **all** SWMUs at the site to assess potential impacts on soils and groundwater and/or to determine the extent and degree of the

contamination. If not, it may be referred to the Enforcement.

Relevant Personnel:

DuPont Contact: Albert J. Boettler, (856) 540-2153
EPA Project Manager: Andrew Park, (212) 637-4184
NJDEP Project Manager: Frank F. Faranca, (609) 984-4071

EI Determination Schedule:

CA725: Possible if DuPont **immediately** begins investigations of **all** SWMUs at the site to assess potential impacts on soils and groundwater and/or to determine the extent and degree of the contamination and to implment all necessary remedial measures by 2005. However, it appears unlikely now.

CA750: Possible if DuPont performs one of the options provided above by 2005. However, it appears unlikely now.

